

## REMARKS

Reconsideration of the rejection of the subject matter of this application is requested.

### **Status of Claims**

Claims 28-30 and 32-39 remain as earlier presented. New claims 40-42 have been added to emphasize an important feature of the invention. As evident, that feature is the same in each of claims 40-42, but each of the independent claims, 28, 35 and 36, now include the combination with the added feature in the new claims.

Claims 28-30 and 32-42 are submitted for consideration.

### **The Drawing**

The drawing appears to be acceptable.

### **Background**

The claims have been rejected over the Kondo patent alone, in the first action; over Japanese patent 723 in view of Tamagawa, also in the first action; over Kinashita in the second action; over Kondo in view of Masahiro, also in the second action, over Kondo in view of Davis in the third action, and now over Kondo in view of Nelson et al. , and Kondo in view of Nelson et al. further in view of Davis. The Kondo patent is the recurring theme. The elements missing from the Kondo patent include vitalizing elements of the invention. The basis for

anticipating those keeps changing, but the logic in applying the secondary references becomes more questionable, as detailed below.

### **Rejections On Prior Art**

Claims 28-30, 33 and 34 stand rejected under 35 U.S.C. 103 as unpatentable over Kondo in view of Nelson et al.

Claims 32 and 39 stand rejected under 35 U.S.C. 103 as unpatentable over Kondo in view of Nelson et al., and further in view of Davis.

Claims 35, and 36-38 stand rejected under 35 U.S.C. 103 as unpatentable over Kondo in view of Nelson et al.

### **Kondo patent**

As mentioned before the feature in applicant's claims that one of the resistor body contacts lies beneath the field plate, thus saving space on the semiconductor IC, has been argued in detail.

There is no resistor contact (limitations c,d in claim 28) beneath the field plate in the Kondo patent. An examination of the Kondo patent reveals that the insulating layer that separates the field plate and the resistor body has no window beneath the field plate. The field plate in Figs. 8 and 9 is element 39-1. There is no window in the insulating layer beneath element 39-1, and there is no portion of element 39-1 that extends through a window to the resistor body 35. Since there are no contacts underneath the field plate, all contacts to the substrate resistor body must lie outside the area of the polysilicon field plate, thus – in comparison

with the arrangement of the invention – consuming unnecessary chip area.

### **Nelson et al. patent**

Evidently the Examiner appreciates that the Kondo patent lacks this feature, and newly cites the Nelson et al. patent as showing such a contact arrangement. But the combination of the Kondo patent and the Nelson et al. patent appears to applicant to be even weaker than the combinations relied on previously in this prosecution. The device described by Nelson et al. is a pinch-off resistor. The reason for incorporating element 41 in the Nelson et al. patent is to achieve the pinch-off function. Absent the need for a pinch-off function, which is the case for both the device of Kondo and the device of applicants, the inclusion of a pinch-off element would be useless and clearly not obvious. There is simply no rational basis for combining these references. The Kondo patent says nothing whatever about pinch-off resistors. And the Nelson et al. patent has nothing to do with field-plated resistors. The mere existence of a contact between an MOS gate electrode and a substrate, as in Nelson et al., is meaningless in the context of applicants' invention. Such contact structures are notorious in the MOS art. The field plate in a field-plated resistor is not an MOS element. There is no correspondence between element 41 in the Nelson et al. patent, and the field plates in either the Kondo patent or in applicants' resistor. As described by Nelson et al., and shown in Fig. 9 of their patent, the MOS gate element 41 is intended to form a depletion layer 52 in the substrate of the device. The depletion layer is an MOS element specific to pinch-off transistors. It is not an element of a

standard silicon resistor as described by Kondo or by applicants.

In conclusion, the combination of Kondo with Nelson et al., and in particular the selection of an element in Nelson et al. which is not consistent with either the function of design of Kondo's device, is not a reasonable combination.

New claims 40-42 have been added to include the feature that the two contacts, the contact to the field-plate, and one of the contacts to the resistor, are essentially in vertical alignment, i.e. one overlies the other. This allows conservation of device real estate.

Compare applicants' Fig. 17 and Fig. 10 of the Kondo patent. In applicants' Fig. 17, the runner 86 should be disregarded since it is a substrate contact, and not part of the resistor structure. The resistor structure in Fig. 17 comprises runners 82 and 84. Fig. 17 is described at the bottom of page 9 of applicants' specification. The field plate is shown as the large dashed box. The resistor strip is shown, also as a dashed box, at 38. Note that in the context of the device real estate, i.e. the plan view of the device, only two contact regions appear (46 and 58). This is a consequence of both forming one of the resistor contacts beneath the field plate, and of the feature now claimed in claims 40-42, namely that the contact to the field plate overlies one of the contacts (46) to the resistor. part of the resistor. For a revealing comparison, see Fig. 9 of the Kondo patent. Here the resistor structure comprises three contact areas, 43-1, 43-2, and 43-3. Obviously the Kondo resistor structure consumes more area than that claimed by applicants. Nothing in the Nelson et al. patent or the Davis patent, or any other reference deals remotely with an area saving expedient, or makes obvious

applicants' solution. Note also, that the savings in area not only make the device dimensions smaller, but there is more area allowed for the crossover runners (90 in applicants' Fig. 17, 44-4, 44-5 in the Kondo patent. Using applicants' invention, the space occupied by Kondo's field-plate contact 44-1 could be used for additional crossover runners.

The Nelson et al. patent has been relied on by the Examiner to anticipate the contact underneath the field plate and the contact to one of the ends of the resistor. Note the clear distinction between the limitation added in claims 40-42 and the Nelson et al. patent. The requirement in the added claims that these contacts are essentially stacked removes any doubt of the non-obviousness of these claims in view of the Nelson et al. patent. In the Nelson et al. patent the overall structure requires that the three contacts 41 be laterally spaced. At the very least it can be said that two contact regions rather than three would be a non-obvious improvement of the Nelson et al. device design.

With regard to the rejections that include the Davis patent as part of the cited combination, the combination of Davis and Kondo is also faulty. The defects in this combination were argued previously.

The dependent claims, claims 29, 30, 32-34, and 37-39, rely largely on the features of the claims on which they depend for patentability.

In view of the amendments and these remarks, reconsideration and allowance of claims 28-30, and 32-42 is requested.

In the event that the Examiner concludes that a telephone call would advance the prosecution of this application, the Examiner is invited and

encouraged to call the undersigned attorney at Area Code 757-258-9018.

Respectfully,



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